This section provides information for the Administrative Authority's consideration as required by Article IX, Section 1 of the Constitution of Louisiana. This section also fulfills the requirement to provide an Environmental Assessment Statement in accordance with LA.R.S. 30:2018(B).

7.1 HAVE THE POTENTIAL AND REAL ADVERSE ENVIRONMENTAL EFFECTS OF THE PROPOSED FACILITY BEEN AVOIDED TO THE MAXIMUM EXTENT POSSIBLE?

Marathon Petroleum Company LLC (MPC), Louisiana Refining Division (LRD) has planned the Garyville Major Expansion (GME) Project such that the potential and real adverse environmental effects of the proposed construction and operation activities will be avoided to the maximum extent possible. As discussed in great detail in this response, appropriate control technologies and operating practices will be utilized to avoid both potential and real adverse environmental effects.

Further, in keeping with the LRD's commitment to environmental excellence as evidenced by its 2002 induction into the United States Environmental Protection Agency's (EPA) National Environmental Performance Track (NEPT) and its charter membership in the Louisiana Department of Environmental Quality (LDEQ) Louisiana Environmental Leadership Program (LaELP), LRD commits to bringing the GME Project on-line with no increase in permitted effluent limits. To ensure the receiving waterbodies are protected to the maximum extent possible and to prevent degradation of the receiving waterbodies, **LRD has requested that the discharge limits in the new permit remain the same as in the existing 2005 Louisiana Pollutant Discharge Elimination System (LPDES) permit**.

NEPT was designed by the EPA to recognize facilities for their achievements beyond compliance. The cornerstones of the program are a record of sustained compliance, community outreach, and an environmental management system that leads to continual improvement. LRD is the first and only petroleum refinery accepted into this elite program. LaELP is a partnership between LDEQ and facilities committed to continual improvement in their efforts to limit pollutant emissions, waste reduction and community outreach; professional organizations, and non-governmental organizations also participate.

The LRD is the newest petroleum refinery in the United States (U.S.). The facility was placed in service in 1976 after the promulgation of the Federal Water Pollution Control Act in 1972 and the Clean Air Act (CAA) in 1970. 1976 was also the same year the first New Source Performance Standards (NSPS) for air were promulgated by the EPA. As a result, the refinery was designed and constructed with state-of-the-art pollution abatement equipment to meet these stringent standards. Consequently, none of the process units required "grandfather" status because they all met or exceeded the NSPS requirements in place when the units were constructed.

LRD's wastewater treatment plant (WWTP) has always met the applicable requirements of the Clean Water Act since its initial construction. In 1978 the refinery and the WWTP were modified and expanded. Because of its state-of-the-art WWTP technology, following this modification, the EPA chose the refinery as a model to test priority pollutant removal using "stable label compound" technology[1]. The WWTP was again expanded in 2005 to accommodate the operation of new gasoline and distillate desulfurization units. These new units were needed to meet requirements of the CAA which mandated EPA reduce sulfur levels in gasoline and diesel.

LRD's WWTP has consistently met the discharge limits set in the refinery's LPDES permit as modified over the years, and indeed the effluent from the WWTP has not exceeded a permit limit in over six years. The refinery was constructed and continues to operate in a manner that ensures that the potential and real adverse environmental effects are avoided to the maximum extent possible.

LRD has submitted a request for Groundwater Certification for the GME Project site that has been approved by LDEQ demonstrating that the project will neither adversely affect the existing groundwater quality nor impede any proposed or ongoing subsurface assessment and/or remedial action.

[1] Stable Label Compound technology used radioisotope tracers to model the fate of priority pollutants based on conventional pollutant (Biochemical Oxygen Demand & Chemical Oxygen Demand) removal.

VPP National Partnership for Environmental Priorities National Environmental Performance Track U.S. Environmental Protection Agency Responsible Care Good Chemistry at Work

7.1.1 Potential Adverse Environmental Effects

Potential adverse environmental effects can be divided into three categories. General adverse environmental effects include those that could be related to the project as a whole (i.e., proximity to sensitive areas, etc.). The other two categories include effects associated with the construction phase of the project and those effects associated with the operation of the expanded facility.

7.1.1.1 General Effects

The proposed expansion area consists of two tracts. The GME Project process units are under construction on an approximately 300-acre recently acquired tract located immediately east of and adjacent to the existing LRD refining complex as shown in Figure 8. The GME Project tanks are under construction to the west side of the refinery in between the existing refinery tanks and the coker conveyor, as also shown in Figure 8. Prior usage of these tracts was agricultural (sugarcane production). Remnants of an abandoned sugar refining mill were present within the east central portion of the east tract. A Phase I Environmental Site Assessment was conducted on this recently acquired 300 acres ("Phase I Environmental Site Assessment; 323-Acre Tract; Cargill, Inc. Property; Garyville, Louisiana; St John the Baptist Parish;" prepared by Environ International Corporation; Baton Rouge, Louisiana; January 16, 2004) for MPC. The report stated that the presence of the former mill did qualify as a recognized environmental condition (as defined by the American Society of Testing and Materials "Standard E 1527-00 – Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process"). However, the report went on to state the following:

> "Based on discussions with knowledgeable agency personnel [Mr. Steven Guidry, Chief Administrative Officer for the St. John the Baptist Parish Planning and Zoning Department] and the former owner, the sugar mill ceased operation in the 1920s, with no known environmental effects from operations. Based on the date of these operations, which predated synthetic agricultural chemicals, the likelihood that past operations have caused a recognized environmental condition is considered low." [Added]

Per the Phase I report, there was no evidence of the presence of hazardous substances on the property. No evidence of aboveground or underground storage tanks was observed. There was no evidence of containers potentially containing polychlorinated biphenyls on the site. No evidence of current or historic oilfield activities was identified.

There is no potential for the proposed project to impact sensitive environmental receptors in the vicinity since the GME Project site had been previously cultivated for sugarcane production. The GME Project is not anticipated to adversely affect the geology, topography, soils, vegetation, or food production in the vicinity. No adverse effect is anticipated with respect to either visibility or opacity in the vicinity or any Clean Air Act Mandatory Class I Federal Area, as the closest Class I Area, the Breton Wilderness Area, is over 174 kilometers to the east-southeast of the project site.

The GME Project will not adversely affect any threatened or endangered species. While the pallid sturgeon (*Scaphirhinchus albus*) and the Gulf sturgeon (*Acipenser oxyrinchus desotoi*) are listed as being present in the Mississippi River and the Lake Maurepas drainage system, respectively, the predominant stressors affecting these fish are loss of habitat and overfishing[2]. Furthermore, the GME Project will not introduce any invasive species into the Lake Maurepas drainage system since any ballast water received by the refinery will be treated through the WWTP and discharged to the Mississippi River. However, while the refinery has not accepted ballast water in over twenty years the LRD wishes to retain this capability. Regardless, if any invasive species were present in a ship's ballast, it is very unlikely they would survive the wastewater treatment process. An explanation of the WWTP can be found later in Section at 7.1.2.2.2, and in greater detail in Section 4 in Binder 1 of the permit application.

Although not required by water quality regulations, during the Phase I Environmental Site Assessment a review of the files at the Louisiana Department of Culture, Recreation and Tourism, Office of Cultural Development, Division of Archaeology was conducted. The assessment revealed that no archeologically-significant artifacts exist in the vicinity. The LRD recognizes the importance of historical site preservation and furthermore has done extensive work in the area to restore, maintain and protect many historical sites and

[2] See 68 FR 13369 and http://www.wlf.louisiana.gov/experience/threatened/pallidsgturgeon.cfm

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attractions. This includes, but is not limited to, restoration of the San Francisco Plantation House and grounds, maintenance of the plantation's former slave graveyard, moving and restoring the first school house in St. John the Baptist Parish from Garyville to the plantation grounds, and restoring the Godchaux-Henderson train in Reserve.

Accordingly, as demonstrated above, there are no general potential adverse environmental effects that would occur as the result of developing the site.

7.1.1.2 Construction Phase Effects

The LRD has an outstanding record of project execution, and over the last ten years has constructed three large projects at the existing refinery. These projects all incorporated the best management practices, engineering practices, and regulatory requirements described in the following three sub-sections, which address each medium. The construction of the GME Project will be handled with the same standards, thus ensuring that the potential adverse environmental effects will be avoided to the maximum extent possible.

7.1.1.2.1 Water

A potential adverse water environmental effect during the construction phase is excessive silt loading in stormwater exiting the construction site. As required, prior to commencing construction, the LRD submitted a Notice of Intent to obtain coverage under the Stormwater General Permit for Construction Activities Five (5) Acres or More. A Stormwater Pollution Prevention Plan (SWP^3) was prepared and implemented identifying Best Management Practices (BMPs) to be employed to ensure that potential effects to the receiving waterbody are avoided to the maximum extent possible. The SWP^3 prescribes the implementation of BMPs in accordance with sound engineering practices to minimize the effects of stormwater discharged from the site to waters of the state. These BMPs include, but are not limited to, the following:

- ◊ The use of silt fencing and grading of the construction area to funnel drainage through hay bales and rock dams to minimize siltation of state waters;
- ◊ Maintaining natural vegetation where practical to help stabilize soil;

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- ◊ Use of limestone for temporary roadways and parking areas;
- ◊ Secondary containment around fuel containers;
- ◊ Maintenance procedures and plans to minimize loss of lubricating and hydraulic oils to the soil;
- ◊ Housekeeping and clean-up procedures;
- ◊ Hydromulching;
- ◊ Contractor certification and training; and
- ◊ Audits and corrective actions.

Additional adverse environmental water effects could result from leaks or spills of fuel, hydraulic fluids, oil or other fluids from earth moving and construction equipment. LRD will ensure that its contractors have preventative maintenance plans in place for their equipment so that this potential adverse environmental effect is avoided to the maximum extent possible. Also the SWP^3 includes measures to further ensure that effects of this nature are avoided.

Other adverse environmental effects could result from a rupture of an oil or fuel storage vessel or transfer hose. LRD will include elements of the federal Spill Prevention, Control, and Countermeasure (SPCC) requirements (see Title 40 of the Code of Federal Regulations, Part 112, [40 CFR 112]) within the SWP^3 to ensure that oil spills are avoided to the maximum extent possible. The SWP^3 will require that secondary containment and other countermeasures are emplaced that will prevent oil spills from storage vessels from reaching waters of the state.

7.1.1.2.2 Air

During the construction phase, potential adverse air environmental effects primarily consist of increases in exhaust emissions from improperly operating earth-moving and construction equipment, as well as delivery vehicles during the construction phase. As referenced above, LRD will ensure that its contractors have preventative maintenance plans in place for their equipment so that this potential adverse environmental effect is avoided to the maximum

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extent possible. In addition, LRD inspectors and construction supervisors will notify equipment operators and delivery contractors if any equipment is observed to be performing poorly (e.g., as evidenced by black exhaust emissions) so that corrective action can be taken.

Another potential adverse air environmental effect consists of excessive dust emissions during periods of dry weather. LRD construction inspectors and contract construction supervisors will make observations regarding the potential for excessive dust emissions, and will wet roads and trafficked areas as necessary. The water used for dust control is clarified river water. Water clarification is discussed in greater detail in Section 7.1.2.2.2.

7.1.1.2.3 Solid and Hazardous Waste

The preventative maintenance plans required of LRD contractors and the SWP[3] will also ensure that the potential adverse environmental effects associated with the generation of solid and/or hazardous wastes resulting from spills of oil or hazardous substances are avoided to the maximum extent possible. The LRD will use its existing protocols for the proper management and characterization of any environmental medium (i.e., soil or groundwater) that has been contaminated as the result of a spill to ensure that it is disposed in accordance with applicable regulatory requirements (e.g., contaminated soil will be shipped offsite for disposal; groundwater will either be taken to an off-site treatment facility or transported to the LRD's WWTP).

The LRD will ensure that general debris generated during construction activities is disposed in accordance with applicable regulatory requirements. Used oil from equipment maintenance is recycled into the refining process.

7.1.1.3 Operating Phase Effects

The potential adverse environmental effects of the GME Project could result from a release of a hazardous material, a fire, an explosion, a security breach, or any combination of the above. An occurrence of these incidents can affect any or all of the three environmental media: air, water and soil. The LRD implements regulatory requirements and best practices to avoid these incidents to the maximum extent possible since it already has refinery operations at this location. The GME Project will incorporate these requirements and

practices. The LRD uses a tiered auditing program to ensure compliance and conformance with regulatory requirements and best practices. In the event an incident occurs, the refinery is ready for a comprehensive and competent response because the refinery has an inclusive Emergency Response Plan called the One Plan, which is regularly exercised in addition to a well-equipped Emergency Response Team (ERT), which is regularly trained.

Safety and environmental stewardship are priorities at the LRD. The refinery is a member of the Occupational Safety and Health Administration's (OSHA's) elite program, the Voluntary Protection Program (VPP). As mentioned earlier, the LRD is also a member of EPA's elite program, NEPT and LDEQ's LaELP. The LRD has maintained STAR status in the VPP program since 1994. STAR status is the highest ranking available within the VPP; it is awarded only to exemplary worksites that have implemented comprehensive, successful safety and health management systems, as well as have achieved injury/illness rates below their industry's national average. The NEPT is a voluntary partnership that recognizes top environmental performance among participating U.S. facilities of all types, sizes, and complexity. It includes both public and private facilities. Program partners provide leadership in many areas, including preventing pollution at its source. Currently, the program has about 500 members. To date, the LRD is the only petroleum refinery that has been inducted into the partnership.

Approximately sixty other facilities in the U.S. share the privilege of membership in both VPP and NEPT.

Cornerstones of both VPP and NEPT are management systems that lead to continual improvement.

7.1.1.3.1 Regulatory Requirements

Adoption of and compliance with OSHA's Process Safety Management (PSM) and EPA's Risk Management Program (RMP) regulations, the United States Coast Guard (USCG) Marine Oil Transfer Regulations and Facility Security Plan (FSP), and adoption of and conformance with voluntary best practices including partnering with local, state and federal authorities will avoid to the maximum extent possible any potential adverse environmental effects of refining operations.

- The PSM program, implemented pursuant to OSHA regulation 20 CFR 1910, is designed to prevent or minimize the consequences of catastrophic releases of toxic, reactive, flammable, or explosive chemicals to employees of a facility. It entails the development of a written plan of action regarding employee participation as well as consulting with employees on the conduct and development of process hazard analyses and on the development of other elements of process safety management required under the rule. Process hazard analyses will be conducted for all applicable activities; corrective action will be taken where unacceptable risks are identified.

- The 1990 CAA Amendments required EPA to publish regulation 40 CFR 68 and guidance for chemical accident prevention at facilities using extremely hazardous substances under the RMP. Many of the components of the RMP overlap with the requirements of the PSM. While the PSM is intended to protect facility employees, the RMP is intended to protect surrounding communities. The following key additional elements are required in the RMP:

  - The LRD will update its hazard assessment that details the potential off-site effects of an accidental release, including a re-evaluation of worst-case scenarios and alternative accidental releases.

  - The LRD's emergency response program provides emergency health care information on the proper first aid treatment for exposure. It also provides employee training for informing the public and response agencies (e.g., the fire department) should an incident occur.

- The USCG Marine Oil Transfer Regulations at 33 CFR 154 regulate marine safety and protection of the environment for facilities transferring oil or hazardous material in bulk between vessels and onshore facilities. These regulations include, but are not limited to, operating rules, equipment requirements, personnel qualifications, emergency planning, spill containment and clean-up, as well as emergency shutdown and communications.

- Since the refinery has docks on the Mississippi River, the USCG part of the Department of Homeland Security, regulates the entire refinery's security program under the maritime transportation facility security standards at 33 CFR 105. The refinery has a USCG approved FSP and participates with the USCG and other authorities in both security drills and training.

7.1.1.3.2 Best Practices

Auditing

The refinery is audited for compliance and conformance through a tiered audit program including:

- The refinery has an established Health, Environmental, Safety, and Security Committee that consists of representatives from all disciplines and groups of employees including fixed-based contractors. This 234-member committee (i.e., 200 MPC employees and 34 contractors) performs monthly safety, environmental and security audits to ensure compliance with OSHA, EPA, LDEQ and USCG regulations. The results of the audits are reported to management monthly. Findings are entered into a database; a responsible person is assigned to address the findings and progress towards resolution is tracked to completion.
- Every two years the refinery undergoes a comprehensive third party compliance audit of its environmental, safety and security programs.
- MPC Corporate audits conformance with the voluntary standards of the American Chemistry Council's (ACC's) Responsible Care® Management System (RCMS). These audits are conducted every three years.
- The refinery is audited by a third party certification body on a three year basis for conformance to the ACC's RCMS. Presently, the refinery is certified compliant.
- OSHA and EPA also audit conformance with VPP and NEPT requirements on a 3-5 year cycle.

Ambient Air Monitoring

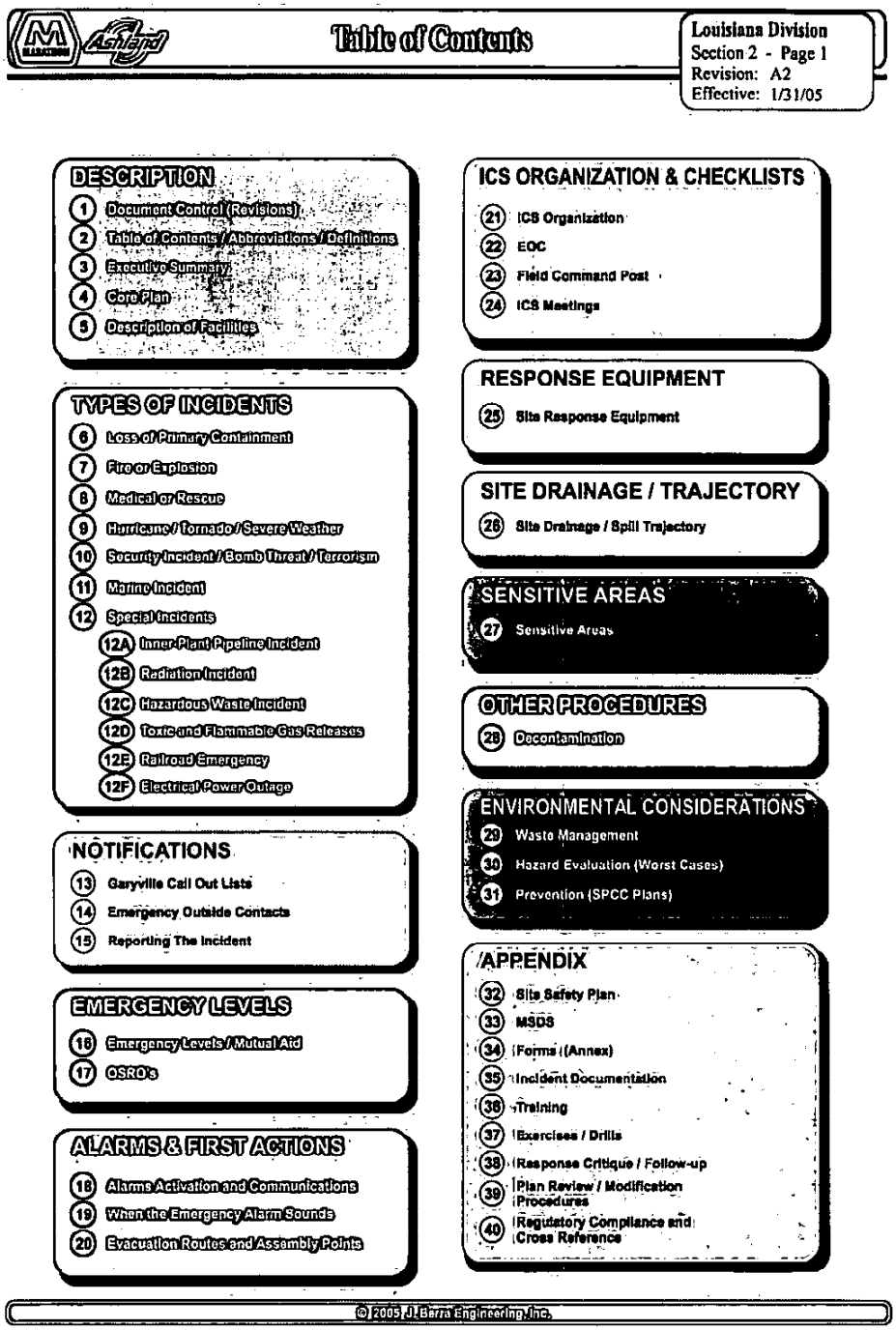
To further avoid adverse air effects, three ambient air monitoring (AAM) stations installed in March 2003 are used to ensure the safety and health of adjacent communities. Since installation, no violations of applicable standards have been detected. These AAM stations were voluntarily installed by LRD. The data are shared with the LDEQ and the local Community Advisory Panel. During the Prevention of Significant Deterioration (PSD) and Title V Operating Permit process, which allowed the construction of the GME Project, LRD elected to enhance this AAM program. As a result, the network will be increased to four stations with all four stations being upgraded to perform real time analysis of several key compounds on LDEQ's air toxics list. Documentation of these upgrades is provided in Attachment 5, a Dec. 1, 2006 letter from R.D. Bedell, Manager of Marathon's LRD, to Dr. Chuck Carr Brown, Assistant Secretary, LDEQ's Office of Environmental Services.

Emergency Response

The LRD has elected to combine several of the plans discussed in this response into an Integrated Contingency Plan, also known as the One Plan, in accordance with guidance issued by the federal National Response Team (NRT). Table 7-1 lists the contents of the One Plan, which demonstrates that appropriately trained people and equipment are in place such that potential adverse environmental effects from emergency incidents will be avoided to the maximum extent possible.

The LRD maintains a large comprehensive ERT that is well-equipped and extensively trained. The team is comprised of the following: the Shift Emergency Response Team, which is trained to meet the OSHA fire brigade standard; the marine dock operators who are trained for initial oil spill response; the Voluntary Emergency Response Team, which is trained to higher levels of fire fighting skills; the Rescue Team, which is composed of first responders and Emergency Medical Technicians (EMTs); and the Air Monitoring Team, which is trained to use air monitoring instruments to do both fenceline and community monitoring in response to odor complaints and emergency incidents. The employees that participate in the Voluntary Emergency Response Team, Rescue Team, and Air Monitoring Team are all volunteers. The One Plan and the ERT are regularly exercised and drilled. Drills include participation with local, state and federal authorities.

Table 7-1
One Plan Table of Contents



Carefully planned training is conducted on a regular basis in the areas of safety, health, environmental, and security to ensure employees are well-equipped to effectively meet LRD's stringent objectives and OSHA standards, as well as LDEQ, La. State Police, USCG, and EPA requirements.

7.1.1.3.3 Commitment to Excellence

The following are examples of the LRD's commitment to environmental, health, safety and security excellence:

- The LRD has compiled one of the best safety records in the refining industry, and annually ranks as one of the top U.S. refineries for safety.
- In 2000, the LRD was one of only two facilities nationwide to receive the National Petroleum Refiners Association's (now the National Petrochemical and Refiners Association, [NPRA]) prestigious Distinguished Safety Award. The Distinguished Safety Award is only presented to those sites with outstanding safety performance and programs.
- Employee Industrial Hygiene Monitoring Programs are routinely conducted to ensure that personnel do not receive any exposure in excess of OSHA limits.
- In 1996, the LRD was named a charter member of LDEQ's LaELP, which is a consortium of environmental groups, industrial facilities and regulatory agencies. Under this program, the LRD has received twelve Governor's Awards for pollution prevention, community outreach, and environmental management systems.
- LRD has voluntarily hosted annual workshops for LDEQ and EPA Region VI since 1992. It has also been an active participant in the LDEQ's annual Conference on Waste and the Environment.
- The LRD received the 2001 Conservation Corporation of the Year award from the Louisiana Wildlife Federation for outstanding contribution to use and management of Louisiana's natural resources.

- In 2003, the refinery was accepted into EPA's National Partnership for Environmental Priorities Program.

- The refinery was accepted into the EPA's voluntary Early Reduction Program for Air Toxics under the Clean Air Act Amendments of 1990. In this program, the refinery reduced toxic air pollutants from five point sources by a total of 136,000 lbs (68 tons). These voluntary emissions reductions were achieved approximately three years ahead of schedule. The LRD was the only petroleum refinery to participate in this national program.

- The LRD's emissions have been modeled for all criteria and toxic pollutants; compliance with all applicable Ambient Air Standards has been demonstrated. The refinery passed the first phase of the EPA's Ambient Air Standards with emissions reaching only about 7.5 percent of significant threshold levels. This point is further solidified by the fact that the Environmental Defense Fund ranked Garyville as one of the lowest emitters of toxic pollutants among petroleum refineries.

- In 2000 Marathon Ashland Petroleum (MAP – now MPC) signed the guiding principles of the ACC's Responsible Care® program. At that time, NPRA of which MAP is a member, had a partnership with the ACC on implementation of Responsible Care®. In 2006, MPC, still a member of NPRA, joined the ACC to pursue full implementation of Responsible Care®. The Responsible Care® Management System (RCMS) includes safety, environmental stewardship, security, as well as raw material and product stewardship. Recently, LRD achieved third-party independent audit certification for conformance with the RCMS technical specification.

These examples further demonstrate that the LRD will avoid potential adverse environmental effects of the GME Project to the maximum extent possible.

7.1.2 Real Adverse Environmental Effects

7.1.2.1 Construction Phase Effects

The LRD has an outstanding record of project execution and over the last ten years has constructed three large projects at the existing refinery. These projects all incorporated best management practices, engineering practices, and regulatory requirements to ensure that the real adverse environmental effects occurring as the result of construction activities were avoided to the maximum extent possible. The construction of the GME Project is being handled with the same standards.

As a real environmental effect, there will be the necessity to handle the vehicle traffic of the construction workers. The LRD is working with the St. John the Baptist Parish Sheriff's Office and the Louisiana State Police to minimize the traffic impact on the local community. If necessary, the GME Project will secure remote parking lots and bus workers to the construction site.

7.1.2.2 Operating Phase Effects

7.1.2.2.1 Air

On December 27, 2006, LDEQ issued a new PSD Permit (the refinery has three additional PSD Permits) and one new Title V Operating Permit as well as modifications to LRD's four existing Title V Operating Permits. These permits are final and allow construction and operation of the GME Project. According to LDEQ's Basis for Decision Document which accompanied the issued permits, "The proposed Part 70 (Title V) permits meet all applicable Louisiana Air Quality Regulations, New Source Performance Standards (NSPS), and National Emission Standards for Hazardous Air Pollutants (NESHAP). The emissions levels allowed by the proposed permits are in compliance with all state and federal regulations. The permit limits are determined to be acceptable and protective of the environment based on the existing Prevention of Significant Deterioration program. Under the requirements of the proposed permits, LRD will install controls according to the Prevention of Significant Deterioration (PSD) regulations known as Best Available Control Technology (BACT)[3].

[3] Footnote from the quoted text is not included herein.

Based on the PSD review by the facility, as accepted by the LDEQ, the LDEQ determined that no other technologies provide more protection to the environment considering all adverse effects (technical and economical)." (See Attachment 6, pages 7 and 8 of the Basis for Decision Document for the 2006 PSD and Title V Operating Permit.)

Further, the LDEQ stated, "The emissions from this proposed project [GME] shall be controlled to meet or exceed the requirements of all applicable regulations and defined permit conditions." (See Attachment 6 page 10 of the Basis for Decision Document for the 2006 PSD and Title V Operating Permit). Therefore, as has been determined by the LDEQ adverse environmental impacts have been avoided to the maximum extent possible. (See Attachment 6 page 12 of the Basis For Decision Document for the 2006 PSD and Title V Operating Permit.)

7.1.2.2.2 Water

As discussed in the previous section of this response, addressing potential adverse environmental effects during the operating phase, the LRD will incorporate the GME Project operations into its One Plan. Protocols are in place for responding to accidental releases of oil and hazardous substances (i.e., SPCC), as well as minimizing the potential for discharging pollutants into waters of the state during rainfall events (i.e., SWP^3). Because these potential adverse environmental effects will be avoided to the maximum extent possible, the real adverse environmental effects resulting from accidental releases of oil and hazardous substances, as well as accidentally contaminated stormwater discharges from the facility will also be avoided to the maximum extent possible. Since accidental releases were addressed previously, the rest of this section will focus on how the LRD avoids the real adverse environmental effects of its routine operations to the maximum extent possible.

The LRD avoids the real adverse effects of its routine operations to waters of the state by employing three important independent but related practices. They are as follows:

1. By being self sufficient for water supply and wastewater treatment, thereby placing no burden on any local, parish or state service providers;
2. Wastewater minimization through water use minimization and reuse; and

3. Advanced wastewater collection and treatment.

Each of these measures will be further discussed in great detail following an introduction of how permit limits are established and of two key specific water quality considerations.

Permit Limits

During the process of issuing an LPDES permit, the LDEQ determines whether a technology-based guideline has been established for the facility's industrial classification. According to the EPA, technology-based effluent guidelines are national standards that are developed by EPA on an industry-by-industry basis and are intended to represent the greatest pollutant reductions that are economically achievable for an industrial sector. To develop these technology-based regulations, EPA first gathers information on the industry's practices, characteristics of discharges, technologies or practices used to prevent or treat the discharge, and economic characteristics. EPA then establishes performance-based standards of the best available technology that is economically achievable for that industrial sector and sets regulatory requirements based upon the performance of that technology.[4] Technology-based effluent limitations (TBELs) do not address impacts of discharges to specific receiving waterbodies.

Once the LDEQ establishes the appropriate effluent limitations based upon the technology-based guidelines, it then conducts a screening analysis to determine whether the TBELs that could be assigned would impair the receiving waterbody (i.e., violate a water quality standard or degrade an existing designated use). If it is found that impairment would occur, the LDEQ then determines whether a more restrictive limitation would be appropriate to protect water quality. This more restrictive limitation is termed a water quality-based effluent limitation (WQBEL).[5]

For the petroleum refining industry, the EPA established TBELs in two phases. The first standards, known as best practicable control technology currently available (BPT), had to be achieved by existing sources no later than July 1977. The second phase required existing sources to meet the more stringent limitations known as best conventional pollutant control

[4] See www.epa.gov/waterscience/guide/questions
[5] See LAC 33: IX. 2707.D.

technology (BCT) and best available technology economically achievable (BAT) by July 1983. Also by that date, EPA required newly constructed sources to meet NSPS. NSPS are even more stringent than BCT and BAT. LRD's present LPDES permit limitations are primarily established on the technology-based BCT and BAT limitations. If LRD were seeking additional permit limitations for the GME Project, these limitations would be based on NSPS. However, LRD has committed to maintain present permit limits for the expanded refinery.

The LRD discharges water into two major drainage basins: the Mississippi River, and Lake Pontchartrain. The actual receiving waterbodies for these discharges are: the Mississippi River subsegment 070301 (Monte Sano Bayou to Head of Passes) and the Lake Maurepas subsegment 040602 (Lake Maurepas drainage system). Subsegment 070301 of the river is not listed as impaired in the LDEQ 2004 Integrated Water Quality Report; however, the same report lists subsegment 040602 of Lake Maurepas as being impacted for non-native aquatic plants and fecal coliform. Non-native aquatic plants and fecal coliform are not present in LRD's discharges to this waterbody, which consist of non-process area stormwater and miscellaneous *de minimis* wastewaters (i.e., hydrostatic test wastewater, air conditioning condensate, steam trap condensate, eye wash and safety shower station water, general facility wash down water, and as needed, irrigation and dust control water).

During the 2004 renewal of LRD's LPDES Permit, LDEQ found "that the discharge from the refinery would have no adverse impact on the existing uses of the river." (See Attachment 7 Public Notice of the 2004 Draft LPDES Renewal Permit). LDEQ also found that the refinery's discharge was not "...at a level which would cause or have reasonable potential to cause, or contribute to an excursion above any state quality standard." (See Attachment 8, Page 17 of the Fact Sheet of the 2004 Draft Permit). As such, with the exception discussed below, it was not necessary to assign any WQBELs in the LRD's LPDES permit.

A WQBEL for hexachlorobenzene was assigned by the LDEQ because of contributions to the refinery's discharge from Pinnacle Polymer's polypropylene plant (co-located at the refinery). Located on approximately 49 acres on the northern portion of the LRD property, as shown on Figure 8, Pinnacle receives its raw material, polymer grade propylene, from the LRD via a pipeline connecting the two facilities. Pinnacle's complex consists of two reaction trains, a purification area, and a pellet processing and loading area. Also included

are cooling towers, a flare, a propylene storage sphere, control room, laboratory, administrative building, and, warehouse. Pinnacle's maximum production capacity is 500,000 tons per year of polypropylene.

LRD continuously receives Pinnacle's washdown water, cooling tower blowdown, process area storm water, treated sanitary wastewater. Also included are Pinnacle's miscellaneous *de minimis* wastewaters, i.e., hydrostatic test wastewater, air conditioning condensate, steam trap condensate, eye wash and safety shower station water, general facility wash down water, and as needed, irrigation and dust control water. Pinnacle's nonprocess area storm water is independently permitted under the LPDES Multi-sector General Permit for Storm Water Discharges Associated with Industrial Activity Permit Number LAR05N523, and therefore is not addressed in this application.

Pinnacle's discharge is subject to effluent limitations for the Organic Chemicals, Plastics, and Synthetic Fibers manufacturing category (OCPSF). See Page 2 of the Fact Sheet in the LRD's Sept. 25, 2004 Draft Permit. In five years of testing LRD's effluent for hexachlorobenzene, the pollutant has never been detected. Pinnacle's discharge to the LRD will not increase as part of the GME Project.

Water Quality Considerations

In accordance with the LDEQ's Antidegration Policy at LAC 33:IX.1109.A, all waters of the state whose existing quality exceeds the specifications of the approved water quality standards or otherwise supports an unusual abundance and diversity of fish and wildlife resources must be maintained at their existing high quality. Further, under the policy, any new, existing, or expanded point source or nonpoint source discharging into state waters will be required to provide the necessary level of wastewater treatment to protect state waters.

In the 2004 permit renewal process, the LDEQ found that the LRD's effluent would not degrade water quality or adversely impact designated uses and that the LRD provides the necessary level of wastewater treatment to protect state waters. The effluent from the LRD's WWTP discharged to the Mississippi River has not exceeded an LPDES permit limit in over six years. One of the reasons that the LRD has such an exemplary record of compliance is MPC's investment in WWTP upgrades concurrent with refinery process unit expansions.

With the additional WWTP upgrade as part of the GME Project, the LRD will be able to operate the expanded refinery at the existing permitted effluent limitations and has so committed.

Furthermore, as previously mentioned, the GME Project is being constructed on land formerly used for sugarcane production. By replacing the sugarcane production area with the GME Project, the discharge of agricultural fertilizers, pesticides and herbicides will be eliminated from the Lake Maurepas drainage system thereby improving the water quality of that drainage system.

The LDEQ policy on LPDES permit renewal at LAC 33: IX. 2707.L (commonly referred to as "backsliding") states that when a permit is renewed or reissued that limitations must be at least as stringent as the final limitations in the previous permit (unless the circumstances on which the previous permit was based have materially and substantially changed since the time the permit was issued and would constitute cause for permit modification or revocation and reissuance). The addition of the GME Project to the existing refinery will indeed be a material and substantial change. Table 7-2 compares the existing refinery permit limitations to those that would be assigned in accordance with EPA technology-based effluent guidelines for the Refining Point Source Category for the expanded refinery.

Table 7-2

Effluent Limitation Comparisons: 2005 Permit, and Post-GME Project Throughputs

Effluent Parameters	Present LPDES Permit Effluent Limits (lbs/day)*		Existing Refinery (275,000 BPSD) Plus GME Project (185,000 BPSD) (lbs/day)**	
	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum
BOD_5	2,909	5,284	3,832	6,912
TSS	2,,374	3,867	3,131	5,138
Oil & Grease	856	1,597	1,147	2,124
COD	20,148	38,983	20,524	51,119
Ammonia as Nitrogen	1,521	3,346	2,354	5,178
Sulfide	14.7	33	19.3	43.0
Phenolic Compounds	18.6	38.2	24.3	50.3
Total Chromium	23.6	68	42.4	101.4
Hexavalent Chromium	2	4.4	3.3	7.4

* Present permit limitations based on BCT and BAT technologies.

** The existing refinery BCT / BAT limitations plus NSPS limitations for the GME Project.

A water quality screening analysis has indicated that the higher limits would not violate any water quality standard in the Mississippi River. Therefore, the LDEQ could increase the effluent limits to the levels represented above; however, the LRD has committed to operating the existing refinery and the GME Project in compliance with its existing LPDES permit limits to ensure that real adverse environmental affects are avoided to the maximum extent possible.

Three Practices To Avoid Real Adverse Impacts

1. Water Supply

The existing and expanded refinery will be totally self-sufficient for water supply and wastewater treatment. Water will neither be required from any municipal or parish supply source nor discharged to any publicly owned treatment works. As is the case for the existing refinery's raw water needs, raw water for GME project usage will be pumped from the Mississippi River and treated for various uses.

The GME Project will add new raw water treatment units that use the same technology as the existing raw water treatment units; however, the water supply for the expanded refinery will be commingled. A new water intake structure will be built to provide additional water required for the GME Project. This new river water intake structure is not a new facility as defined in EPA's Phase I regulations promulgated pursuant to §316(b) of the CWA. New facility as defined at 40 CFR 125.83 means:

> "any building, structure, facility, or installation that meets the definition of a "new source" or "new discharger" in 40 CFR 122.2 and 122.29(b)(1), (2), and (4) and is a greenfield or stand-alone facility; commences construction after January 17, 2002; and uses either a newly constructed cooling water intake structure, or an existing cooling water intake structure whose design capacity is increased to accommodate the intake of additional cooling water. New facilities include only "greenfield" and "stand-alone" facilities. A greenfield facility is a facility that is constructed at a site at which no other source is located, or that totally replaces the process or production equipment at an existing facility (see 40 CFR 122.29(b)(1)(i) and (ii)). A stand-alone facility is a new, separate facility that is constructed on property where an existing facility is located and whose processes are substantially independent of the existing facility at the same site (see 40 CFR 122.29(b)(1)(iii)). New facility does not include new units that are added to a facility for purposes of the same general industrial operation (for example, a new peaking unit at an electrical generating station)."

The GME Project is neither a greenfield nor a stand-alone facility since it is being constructed contiguously with the existing refinery; the existing refinery and the GME Project will be highly interconnected / integrated with each other. While not required, LRD will voluntarily install wedgewire cylindrical screen on the new river water intake structure in order to reduce mortality levels of aquatic organisms such as fish, shellfish or their eggs. EPA has approved the use of the wedgewire cylindrical screen as an operational technology that is considered to be best technology available as prescribed in the 316(b) regulations. Further, the LRD does not use once through cooling water which is also consistent with EPA best technology available.

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Raw water from the river first undergoes cold lime softening which removes suspended solids. Insoluble materials are returned directly to the river with no further treatment. Following cold lime softening, water is then used directly for cooling water, hydrotesting and wash water, or further treated for process water, boiler feed water, or potable water usages. Water for both training and actual firefighting is also taken from the Mississippi River, but maintained in a separate system used primarily for these purposes (occasionally firewater may be used for hydrostatic test water).

2. Wastewater Minimization Through Water Use Minimization And Reuse

The LRD discharges treated effluent into the Mississippi River in accordance with its LPDES permit No. LA0045683. As is the case with the existing refinery, the real adverse environmental effects of the GME Project will be avoided to the maximum extent possible. This is accomplished by first reducing the amount of water used in the refining process and for utilities, thus minimizing the amount of water requiring treatment and discharge. The following are examples of wastewater minimization efforts at LRD:

- To reduce the refinery's need for raw water from the river, the existing refinery uses no once through cooling water. The GME Project will also use no once through cooling water. Furthermore, eliminating once through cooling water reduces thermal loading to the receiving waterbody avoiding adverse environmental impacts to the receiving waterbody to the maximum extent possible. Although not required (since it does not have a thermal component to its discharge), the LRD will meet the intent of §316.A of the CWA. This section states that the thermal component of any discharge from a source will require effluent limitations more stringent than necessary to assure the projection and propagation of a balanced, indigenous population of shellfish, fish, and wildlife in and on the body of water into which the discharge is to be made.

- The existing refinery heavily depends on air cooling using banks of fin-fans to cool refinery intermediates and products. A fin-fan is an air cooled heat exchanger (ACHE) and requires no water. An ACHE is a device for rejecting heat from a fluid directly to ambient air. This is in contrast to rejecting heat to

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water and then rejecting it to air as with a shell and tube heat exchanger and a wet cooling tower system. To the extent practicable based on unit technology, the existing LRD units maximize the use of ACHEs which also reduces the volume of wastewater generated. The GME Project will do likewise.

- Boiler feed water requirements and blowdown are minimized by maximizing the recovery of water from condensed steam that is recycled back to the boiler feed water system. This is true for the existing refinery and will also be true for the boilers that are part of the GME Project.

- The existing refinery operates several hydrotreating units which remove sulfur and nitrogen from various hydrocarbon streams prior to further processing or product blending. This is necessary to make environmentally acceptable fuels. Water is injected into these units to prevent salt accumulation and plugging. Here the water comes in contact with some hydrocarbon but primarily with hydrogen sulfide and ammonia, which are the compounds formed when the sulfur and nitrogen are removed from the hydrocarbons. These compounds are steam stripped out of the water and become part of the feed to the sulfur units which convert the hydrogen sulfide to elemental sulfur. To reduce the refinery's generation of wastewater, once this water is stripped, it is routed to the desalters for use in the crude desalting process. Desalting crude oil with washwater is necessary to protect refinery equipment from corrosion induced from salts as well as to reduce equipment plugging by removing suspended solids. The GME Project will have several new hydrotreaters and desalters, and will also use the same water recycling practice.

- Petroleum cokers upgrade the heavy asphaltic portion of crude oil into fuel grade components and produce a by-product called petroleum coke or coke. The coke resembles coal and is removed from the unit by cutting using high pressure water spray. During this process, the water comes in contact with some hydrocarbon and coke particle fines. Again, to reduce the refinery's generation of wastewater, this water is clarified and recycled back through the cutting process.

3. Wastewater Treatment

In the existing refinery, wastewater streams including refinery process wastewater, lab wastewater, cooling water blowdown, boiler blowdown, softener regeneration, sandfilter backwash (from the raw water clarification process), microfiltration backwash (from the potable water process) and process area stormwater (all collectively referred to as wastewater) are routed to the oily water sewer system (OWS) as shown on Figure 9. To facilitate the collection of process area stormwater, all existing refinery process areas are paved and curbed; this stormwater is also routed to the OWS. The four existing marine docks located on the Mississippi River are also paved and curbed. Stormwater which falls on the docks is collected in sumps under the docks and then pumped to the Ballast Water Tank[6] for treatment in the WWTP. The OWS transports the water to the WWTP where the water is treated to meet permit discharge limitations. In addition, as discussed above both process effluent and process area stormwater from Pinnacle's facility are treated in the LRD's WWTP prior to discharge. The effluent from the WWTP then commingles with effluent water from the Fluid Catalytic Cracking Unit (FCCU) scrubber settling pond as described below. Raw river water solids that were removed in the clarification process for water supply purposes are subsequently added to these combined streams and then discharged to the Mississippi River.

The wastewater from the GME Project will be handled in a similar manner. The GME Project units and the fifth dock will also be paved and curbed. Wastewater will be collected in the OWS and routed to the expanded WWTP for treatment to meet permit discharge limitations. Since a new FCCU is not part of GME Project, there will be no new FCCU scrubber settling pond effluent. Raw river water solids that will be removed by the new GME Project raw water clarifier will also be added to the combined streams and discharged to the Mississippi River as described above.

Existing wastewater treatment facilities at LRD consist of a wastewater collection system or OWS with components that meet 40 CFR 63 Subpart QQQ requirements. With the following four exceptions, all other wastewater is routed to the OWS:

[6] The Ballast Water Tank was built to receive ballast water from marine vessels as necessary, as well as storage tank water bottoms and stormwater from the marine docks. The refinery has not accepted ballast water in over twenty years; however, the refinery wishes to retain this capability.

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- Because of their benzene content, desalter effluent and Ballast Water Tank effluent are hard piped to the benzene stripper. The benzene stripper effluent is then hard piped to the WWTP. The GME Project will add a second benzene stripper to process the water from the GME Project desalters.

- Pinnacle's wastewater and process area stormwater are introduced through an internal outfall directly to the WWTP.

- LRD is currently authorized in the LPDES permit to treat and discharge certain wastewaters from the MPC Products Distribution Terminal (terminal), which is located contiguous to the refinery. Since this wastewater may contain benzene, it is air sparged at the terminal. Air sparging strips dissolved hydrocarbons (including benzene) from the water. The exhaust air including any hydrocarbon vapor from the stripping process is routed via hard pipe to the terminal's vapor recovery unit in accordance with the terminal's air permit. The stripped wastewater has no detectable levels of priority pollutants. The treated wastewater is vacuum trucked on a batch basis (approximately once per month) from the terminal to the refinery's WWTP.

- The refinery uses water with dissolved sodium hydroxide (caustic) to scrub the flue gas from the FCCU regenerator. In an FCCU, heavy, waxy paraffin hydrocarbons are cracked into lighter molecules that are blended into finished gasoline and diesel. In the process, some of the heavy hydrocarbons are deposited on the units circulating catalyst in the form of coke. This coke deactivates the catalyst and must be burned off to regenerate the catalyst. The combustion gas from this regeneration contains catalyst fines (mainly clay and sand type materials), and gaseous sulfur dioxide (SO_2). These materials are scrubbed from the flue gas into the circulating water in the FCCU scrubber. Since the scrubber effluent contains only catalyst fines and dissolved SO_2, it is not treated in the WWTP. The scrubber effluent is aerated to promote the oxidation of SO_2 to SO_4, a safe to discharge form of sulfur oxide. It then enters a settling pond where the catalyst fines settle out. Although effluent from the FCCU settling pond is normally discharged directly to the firewater pond without further treatment, if necessary, it can be routed through the

entire WWTP. The firewater pond is a final polishing / settling pond for effluents from the WWTP and the FCCU scrubber settling pond. The name comes from its former service as a firewater reservoir. The treated scrubber and the WWTP effluents are commingled and sampled to ensure compliance with the LPDES permit prior to discharge.

The effluent from the LRD's WWTP has not exceeded an LPDES permit limit in over six years. One of the reasons that the LRD has such an exemplary record of compliance is MPC's investment in WWTP upgrades concurrent with refinery process unit expansions. The existing WWTP consists of four biological treatment trains. The four trains share a common American Petroleum Institute (API) separator, which provides primary oil, water and solids separation. The API separator water effluent flows into a feed Equalization Tank (EQ) so that feed quality is "equalized" before entering the Biological Reactors. Effluent from the EQ feeds the secondary oil, water and solid separators (secondary separators), which function to remove fine droplets of suspended oil and suspended solids before the wastewater enters the Biological Reactors. Three of the trains share two Dissolved Air Flotation (DAF) Units as their secondary separators. The fourth and newest existing train utilizes an Induced Gas Flotation (IGF) Unit for that purpose. Like the DAF, the IGF uses air. Following primary and secondary oil, water and solids separation, the wastewater is cooled to help protect the biomass in the Biological Reactors. Three of the trains share a wetted media, evaporative style cooling tower, and the fourth uses a Closed Circuit Cooling Tower (CCCT). Three of the trains utilize completely-mixed, extended aeration Biological Reactors followed by Conventional Clarifiers. The fourth train is an Advent Integrated System (AIS) and utilizes an air lift Biological Reactor (with anoxic zone and aerobic zone) and an Integral Clarifier. The wastewater treatment system was recently upgraded (i.e., the fourth train was added), and has the capacity to treat larger volumes of wastewater than the amount generated by current operations. As such, it will only be necessary to add a second AIS as the fifth Biological Reactor treatment train (designed similarly to the newer fourth train) to accommodate the additional wastewater volume generated by the GME Project. Based upon estimated volumes from the GME Project, the combined refinery will require the capacity to process approximately 3,600 gallons per minute (GPM) of WWTP influent; the expanded WWTP will be able to process approximately 4,000 GPM. This additional capacity will ensure that the refinery can maintain compliance with its wastewater permit

limits in the event that one of the trains or component of the treatment units must be taken out of service due to malfunction or maintenance.

To support the GME Project, the refinery's WWTP will be increased to include an OWS serving the new GME Project units with components that meet 40 CFR 63 Subpart QQQ and FF requirements, as well as a second API Separator and a second EQ. The two EQs will provide common feed to the existing four and the new fifth Biological Reactor wastewater treatment trains, which will operate in parallel with each other[7]. The fifth train will consist of an IGF Unit, a CCCT, an AIS Biological Reactor (with anoxic zone and aerobic zone), and an Integral Clarifier.

While not regulatorily required, LRD chose the AIS technology because in addition to removing the conventional and non-conventional refinery pollutants, this technology also removes nitrates. Thus, the fourth and fifth Biological Reactors have the ability to remove between 85-90% of dissolved nitrates, a common nutrient in treated refinery effluent. Some nitrates are contained in the raw river water, but most are produced by the biological oxidation of ammonia (a non-conventional refinery pollutant) in the Biological Reactors. Nutrient (nitrates and phosphates) loading into the Mississippi River has been linked to hypoxia (lack of oxygen in the water due to algae blooms caused by nutrient rich water) in the Gulf of Mexico (commonly referred to as the "Dead Zone" – see the Louisiana Universities Marine Consortium [LUMCON] site on Gulf Hypoxia, http://gulfhypoxia.net/). By employing this nutrient removal process, LRD even further ensures that real adverse effects associated with its operation are avoided to the maximum extent possible.

A Thermal Desorption Unit (TDU) is currently used to treat the sludges that have been removed from the wastewater by the primary and secondary oil, water and solids separation equipment. These sludges are heated in the TDU process to: 1) vaporize any low boiling organic materials that may be present; and 2) dry the material for shipment offsite. The vapor created from this process is routed to the TDU Heatec Heater for destruction. With the addition of the new proposed API Separator, the TDU will experience an increase in throughput.

[7] At the time of the submittal of this permit application, the final engineering for the manifold system for the two EQs has not been completed. The goal is to provide maximum distribution flexibility to any of the five biological reactors.

Non-process Area Stormwater

In the existing refinery, non-process area stormwater is rainwater that falls outside of the paved, curbed areas of the process units onto roadways, ditches, grassy areas, gravel/aggregate surfaced areas and inside diked secondary containment areas. This stormwater is segregated by a series of drainage ditches and the stormwater sewer network for direct discharge by gravity flow through several permitted discharge points. All of the nonprocess area stormwater discharge outfalls may also contain intermittent non-contaminated hydrostatic test wastewater and miscellaneous *de minimis* discharges (including air conditioning condensate, steam trap condensate, eye wash and safety shower station water, and general facility wash down water, and as needed, irrigation and dust control water).

Adoption of and compliance with OSHA's PSM and EPA's RMP regulations, implementation of the USCG Marine Transfer Regulations, and adoption of and conformance with voluntary BMPs including partnering with local, state and federal authorities avoid real adverse environmental effects to the maximum extent possible. To prevent the release of significant materials[8], the LRD SWP[3] prescribes the implementation of BMPs in accordance with sound engineering practices to minimize the effects of stormwater discharged from the site to waters of the state. These structural controls include but are not limited to:

- Secondary containment is provided around hydrocarbon tanks, hazardous materials handling areas, and the hazardous / non-hazardous waste storage areas.
- Drainage from the existing secondary containment areas is controlled by manually operated valves. It is routed through a baffle pond with an oil trap prior to discharge. Similar drainage from the GME Project area will also be

[8]According to the EPA, "significant materials" includes, but is not limited to: raw materials; fuels; materials such as solvents, detergents, and plastic pellets; finished materials such as metallic products; raw materials used in food processing or production; hazardous substances designated under Section 101 (14) of CERCLA; any chemical the facility is required to report pursuant to Section 313 of Title III of SARA; fertilizers; pesticides; and waste products such as ashes, slag and sludge that have the potential to be released with storm water discharges.

routed through a baffle pond with an oil trap before being discharged. This structural control is enhanced through the nonstructural practice of visually inspecting the secondary containment and the stormwater therein for evidence of hydrocarbon prior to discharge.

- Sloping and grading of roads and land surfaces are used to direct stormwater runoff to a storm drain where appropriate. The storm drainage systems of pipes, collection basins, pumps, ditches, and holding tanks provide a mechanism to contain and control runoff facilitating the effective use of containment and countermeasures in spill control.

- Minimizing the storage of significant materials outside of secondary containment in unroofed areas that have direct discharge of stormwater.

Nonstructural BMPs employed at the site, which aid in pollution prevention and the management of storm water (as well as process wastewaters) includes the following:

- Tiered health, environmental and safety audits conducted by LRD teams with members from craft, professional and supervisory ranks, third party compliance consultants, regulatory agencies, and MPC corporate groups;

- Operation's Department Procedures that meet specific requirements of OSHA's 29 CFR 1910.119 standard for PSM and specifically address emergency operations;

- Spill Prevention Control and Countermeasure Plan per 40 CFR 112;

- Spill Prevention and Control Plan per LAC Title 33, Part IX, Chapter 9 for oil and hazardous substances as defined at LAC Title 33, Part I, Chapter 39;

- LRD's integrated contingency plan known as the "One Plan" for emergency response situations. The One Plan meets the requirements of EPA's 40 CFR Part 68 Chemical Accident Prevention, RMP, OSHA PSM, and includes the OPA 90 Facility Response Plan;

- The USCG approved LRD Security Plan;

- Employee Health and Safety Training Programs on Refinery Operations; and
- Equipment Preventative Maintenance Programs and Inspections.

All of the above structural and nonstructural BMPs implemented by LRD avoids real adverse environmental effects to the maximum extent possible.

7.1.2.2.3 Solid and Hazardous Waste

LRD does not treat or dispose of solid or hazardous waste onsite. This will not change as a result of bringing the GME Project on-line. The programs highlighted in the response language addressing potential adverse environmental effects (i.e., STAR status in OSHA's VPP program, membership in the EPA's NEPT program, etc.) will continue and will apply to the GME Project. While there will be an increase in the generation of non-hazardous solids from the treatment of wastewaters generated by GME operations, the refinery will dewater the solids to reduce waste volumes that must be shipped offsite. The LRD will also continue its significant efforts in the areas of material reuse, recovery and recycling. For example, oily sludges such as those generated from API Separators are sent to the TDU; thus residuals from this process are no longer hazardous. Present hydrotreating catalysts are and additional hydrotreating catalyst will be shipped offsite for metals recovery. Caustic solutions used in the refining process are either treated in the wastewater treatment system or shipped offsite for regeneration and returned to the refinery for further use. Additional efforts are conducted to capture oily residuals to return them to the refinery processing system. These practices will be adopted by the GME Project activities. As such, real adverse environmental effects associated with the generation of solid and hazardous wastes will be avoided to the maximum extent possible.

7.1.3 Summary

The LRD has demonstrated outstanding safety performance and environmental stewardship as evidenced by its membership in both OSHA's elite VPP Star program, and EPA's elite NEPT program. In addition, the rigorous health, environmental, safety, and security management systems already in place will allow LRD to achieve continual improvement in these critical areas. This demonstrated outstanding performance and commitment to continual improvement will allow LRD to construct and operate the GME Project and avoid

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both the potential and real adverse environmental effects to the maximum extent possible. At the same time, the GME Project will bring real benefits to the local community, to the state, and to the nation.

7.2 DOES A COST BENEFIT ANALYSIS OF THE ENVIRONMENTAL IMPACT COSTS BALANCED AGAINST THE SOCIAL AND ECONOMIC BENEFITS OF THE PROPOSED FACILITY DEMONSTRATE THAT THE LATTER OUTWEIGHS THE FORMER?

7.2.1 Environmental Impact Costs

Environmental impact costs stem directly from the adverse environmental effects resulting from the implementation of a project. As demonstrated in Section 7.1, the potential and real adverse environmental effects have been avoided to the maximum extent possible; therefore, environmental impact costs associated with the LRD GME Project will be minimal.

The environmental impact costs from the operation of the GME Project will be avoided to the maximum extent possible because of the LRD's commitment to safety, environmental stewardship, and security. This commitment to outstanding performance in these key areas is attested to by OSHA, EPA, and LDEQ through the refinery's membership in the regulators' elite programs: VPP, NEPT, and LaELP. The LRD shares membership in VPP and NEPT with only approximately sixty other facilities in the nation, and it is the only petroleum refinery in the nation granted NEPT membership by EPA. The management systems that are required by these elite programs lead to continual improvement, sustained compliance, achievement beyond compliance, employee involvement, and community outreach. Thus, potential and real adverse environmental impacts are avoided to the maximum extent possible.

7.2.2 Social Benefits

A shortfall in crude oil refining capacity has contributed to the recent increase in the price of fuels. According to the U.S. Energy Department's Energy Information Administration (EIA) "Primer on Gasoline Prices 2005," due to the dramatic increase in global demand, all sectors of the oil market are being stretched nearly to their limits. On December 11, 2007, EIA released its "Short-Term Energy Outlook," predicting average prices for unleaded regular gasoline at $3.40 per gallon in the spring of 2008. Market volatility is noticeably linked to geopolitical stressors. Further, from a Homeland Security standpoint, the U.S. is vulnerable

with respect to its potential inability to meet critical fuel demand needs in the event of a crisis.

The U.S. refining industry cannot meet U.S. demand, and consequently the nation relies on foreign imports of refined fuels. Therefore, no elasticity exists in the fuels supply to absorb any unforeseen events that can decrease production, e.g., fires or hurricanes. Such incidents then cause almost instantaneous fuel price spikes and in some cases fuel shortages. Accordingly, the increased capacity that will be provided by the GME Project will help to lessen this volatility by ensuring that additional supply is available. The positive social and economic effects will be realized regionally and nationally. This is further illustrated in Table 7-3 below.

Table 7-3
2006 Light Product Supply and Demand (Thousands of BPD)
(Gasoline, Jet Fuel / Kerosene, Diesel Fuel)

	Gasoline	Jet Fuel / Kerosene	Diesel Fuel	Total
US Production	7,907	1,528	4,040	13,475
Imports	1,144	191	365	1,700
Export/Other	150	44	215	409
US Demand	9,253	1,687	4,169	15,109
Gulf Coast Production	3,672	774	1,928	6,374
GME Production	74	40	30	144
% US Production	0.90%	2.60%	0.70%	1.10%
% Gulf Production	2.00%	5.20%	1.60%	2.30%
% US Demand	0.80%	2.40%	0.70%	0.90%
% Imports	6.70%	26.30%	9.20%	9.10%

The above production and demand numbers are from 2006 EIA data. The percent of production, demand and imports assumes that both 2006 production and demand stay flat and the GME Project comes on-line in late 2009. In the above table, one can see that the GME Project will lower demand for imported refined product by 8.5% and will satisfy 0.9% of the U.S. demand.

The impact of fuel price increases is being seen across all sectors of the economy. On December 14, 2007, the U.S. Labor Department announced that the Consumer Price Index (CPI) rose by 0.6% in November. It reported that this sharp increase was led by a 9.7% jump in gasoline prices during that period. Without expanding U.S. petroleum refining capacity, supplies of fuels will stay flat, but the increased demand may continue to drive fuel prices and the CPI even higher.

In 2005, the impacts of Hurricanes Katrina and Rita further exacerbated the situation by shutting down between 10 and 15 percent of U.S. petroleum refining capacity. According to Colorado State University researchers ("Extended Range Forecast of Atlantic Seasonal Hurricane Activity and U.S. Landfill Strike Probability for 2008"; Gray, W.M. and Klotzbach, P.J.; December 7, 2007), the 2008 Atlantic hurricane season will be much more active than the average 1950 – 2000 season. They estimate for 2008 about 7 hurricanes (5.9 average), 13 named storms (9.6 average) and 3 intense Category 3 or higher hurricanes (2.3 average). This projected increase in hurricane activity could create further supply shortages, resulting in less refining capacity and available refined products.[9]

7.2.3 Community Outreach and Involvement

In addition to the LDEQ public hearing, the LRD held five meetings with members of the local community to ensure they were aware of its interest to expand the refinery and to disseminate information. These meetings allowed LRD to listen and respond to public concerns.

LRD and its employees are active volunteers in numerous charitable and social programs which benefit the local community. They have contributed and will continue to contribute a great amount of time, effort, and direct financial assistance to many valuable organizations and causes that directly benefit the citizens of St. John the Baptist Parish (Parish) and the surrounding areas. Some examples of the LRD's participation in such efforts are as follows:

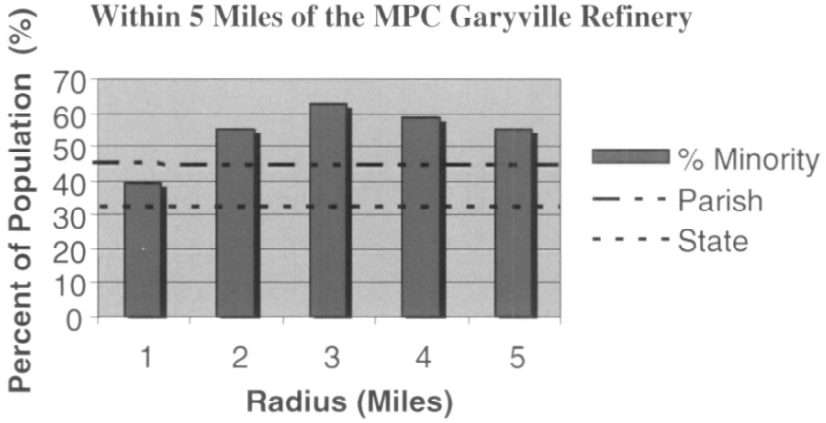
[9] See in part the attached (Attachment 9) May 16, 2007 *Statement by John Felmy, Chief Economist, American Petroleum Institute House Judiciary Committee Antitrust Task Force Hearing on "Prices at the Pump: Market Failure and the Oil Industry."*

- United Way Campaign – 2007 donations totaled $162,965, including corporate and employee contributions. LRD personnel have served as coordinators of the annual St. John United Way Golf Classic, which raised over $67,000 in 2007;
- The LRD has adopted Ezekiel Jackson Park in Garyville, LA. Since 2001, the LRD has made park improvements and has annually held a family picnic day providing food, drinks and entertainment for the community. Approximately 300 residents attended Ezekiel Jackson Park day in 2007;
- For the 22nd year, LRD provided 12 hours of annual training for ~50 local volunteer firemen from the four surrounding fire departments;
- LRD participated in monthly Community Action Panel meetings to address key issues in the community, including an on-site meeting and refinery tour;
- Partnered with River Parishes Hospital to conduct on-site medical surveillance exams for the ERT;
- Sponsored a "Teach for America Corps" teacher at East St. John Elementary School;
- In 2007, 14 families were adopted for Christmas and 450 meals were provided at Thanksgiving for those in need of assistance. Since 1996, in coordination with the St. John Sheriff's Department and St. Charles High School, the LRD has sponsored Thanksgiving Day meals for various Parish residents in need of assistance;
- The LRD has aided in the development of the Process Technology and Industrial Mechanical Program at the Louisiana Technical College in Reserve, Louisiana, by providing scholarships and other resources for numerous programs. Since 2001, the LRD has sponsored a School to Career Day at the Louisiana Technical College where all 10th grade students (~500 students) in the Parish visit the school to learn about the skills that are necessary to work in industry;
- Held four blood drives in 2007;

- Provided hydrofluoric acid treatment training for community hospital staff;
- The LRD has adopted East St. John Elementary School since 2000. The LRD provides monetary donations to the school, and LRD employees participate in various school activities such as: lab experiments, tutoring, reading programs, and beautification efforts.

In addition, a demographic analysis was conducted to determine whether there would be a disproportionate impact to minorities or economically-disadvantaged residents within the surrounding community. The most recent data available were examined ("Census 2000 Summary File 3;" U.S. Census Bureau; 2002), and it was determined that no such disproportionate impacts will occur. Table 7-4 illustrates the percentage of minority residents within a five mile radius of the LRD.

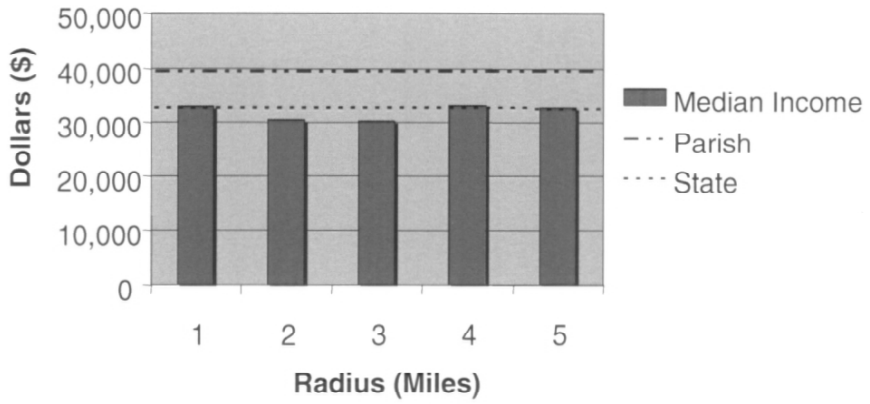
Table 7-4
Minority Population Demographics
Within 5 Miles of the MPC Garyville Refinery



As can be seen, minority residents closest to the refinery are not disproportionately affected.

Similarly, Table 7-5 illustrates that there is no disproportionate impact to economically disadvantaged residents within the surrounding community.

Table 7-5
Median Household Income
Within 5 Miles of the MPC Garyville Refinery



Further, the success in LRD's effort to minimize impacts to local residents is illustrated in Figure 10 which depicts distances from the proposed expansion areas to the nearest households. As can be seen, there are no households located within 800 feet of the expansion areas.

7.2.4 Contributions

The LRD donated $386,686 in 2007 from its Dues & Donations Budget to support local organizations. A partial breakdown of funding for 2007 for local charitable donations is as follows:

$ 256,000	-	Public, Cultural & Scientific
$ 53,000	-	Education (grants/scholarships)
$ 62,400	-	Corporate United Way Donation for 2007
$ 15,286	-	Louisiana Charitable Giving

Representative organizations for which support has been provided include:

Cultural

- St. John Theatre (for various productions)
- River Region Arts and Humanities Council

Historical Preservation

- San Francisco Plantation

Youth Activities

- Ezekiel Jackson Park (adoption and ongoing improvements)
- Summer Witness Program
- St. John Parish Youth Challenge

Education

- East St. John Elementary Adopt-A-School
- LA Technical College
- Teach for America Participation
- LA Engineering Advancement Program (LEAP)
- St. John Honor Roll Round-up to motivate students to excel academically
- Science Screen Report
- River Parishes Education Initiatives member

Philanthropic

- St. John Ministry of Care contribution in lieu of Christmas cards
- St. John United Way
- St. Charles Catholic School Thanksgiving Meal (annually)
- LA Special Olympics
- St. John Association of Retarded Citizens

- St. Hubert Catholic Church Sharing
- Our Lady of Grace Church

Other

- National Foundation for Cancer Research
- American Cancer Society (St. John Parish Relay for Life)
- American Heart Association (River Region Gala)
- St. John Sheriff's Bullet Proof Vest Fund

There are no known adverse social costs associated with the LRD GME Project. The project will involve the expansion of the existing refinery on land already owned by MPC. There is no expectation that noise pollution, light pollution, or other such sensory factors will be increased in detectable amounts that would create a nuisance to nearby residents, scenic, or recreational areas because the area immediately in the vicinity of the LRD facility is sparsely populated and zoned as heavy industrial.

The GME Project will be situated on property owned by MPC and adjacent to the existing petroleum refinery which has been in operation for many years. Since the property is intended and zoned for industrial use and will be located adjacent to existing petroleum refining units, the addition of the GME Project will not adversely affect neighboring property values. To the contrary, it is anticipated that property values could increase as the result of The Gulf Opportunity Zone Act of 2005 (GO Zone), signed into law by President Bush on December 21, 2005. This statute contains significant economic incentives to rebuild the Gulf Coast, as well as to attract new investments to the affected areas. These incentives are intended to stimulate rapid, private investment within the GO Zone. The LRD is within the GO Zone.

The long-term impact on roads is expected to be minimal. Raw materials and products will continue to arrive at the LRD facility by truck, pipeline, rail, barge, and ship and will leave by these same means. There will be an increase in road traffic during construction; however, the increased traffic on US Highway 61 should be manageable, as it is a substantial four-lane highway with adequate shoulders and turn lanes. The LRD is working with the St. John the Baptist Parish Sheriff's Office and the LA State Police to minimize the traffic impact on the

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local community. If necessary, the GME Project will secure remote parking lots and bus workers to the construction site. The existing road leading from U.S. Highway 61 to the refinery is owned by the LRD and is not a public road. To support the GME Project, the LRD will add two new roads to provide additional access to U.S. Highway 61.

Fire protection for the site and associated equipment will be provided by expanding the existing firewater system. The LRD maintains a large comprehensive ERT. For further detail on the capabilities of the ERT see Section 7.1.1.3.2. The GME Project will not require any new fire fighting techniques or equipment beyond present capabilities.

There should be no need for additional medical facilities. While permanent employees will reside in local communities, it is anticipated that healthcare needs will be spread out regionally and should not overburden existing providers. In addition, LRD's ERT includes trained EMTs capable of providing care to refinery employees in the event of a health emergency or injury. Similarly, there are no anticipated significant additional costs for schools as a result of this project. In fact, the economic impact from additional taxes generated will provide increased long-term funds to improve local schools.

The GME Project will be constructed adjacent to an existing petroleum refinery on property zoned for industrial activity. As a result, the construction and operation of the project will not preclude additional economic development in the area, but rather is expected to increase local economic activity.

As demonstrated above, the social benefits that will be provided by the implementation of the GME Project are substantial, and are not diminished by any adverse social costs.

7.2.5 Economic Benefits

The LRD has been in operation for over 30 years at its current location, and currently employs 675 Marathon employees and 345 fixed based contractors. There are an additional 100 MPC employees (GME Project, Pipeline, Terminal, Marine, etc.) working in conjunction with the refining operations in Garyville. Total combined payroll is $82 million, without fringe benefits. These wages represent a significant benefit to the local economy. The facility is the largest private employer in the Parish.

The GME Project will provide significant direct and indirect economic benefits to both the Parish and the State of Louisiana. Excluding land costs, the cost for construction will be approximately $3.2 billion. The project will create an average of 2,000 direct jobs, with a peak of 4,000 direct jobs during the construction phase. Permanent jobs will include 190 [10] new LRD jobs and 75 new fixed based contractor jobs, with a combined estimated additional annual payroll of $16.8 million (without fringe benefits). This translates to an annual average salary of $68,000, without fringe benefits and $95,000, with fringe benefits, for an LRD employee. For contract employees, annual average salary without fringe benefits will be $51,000, and $72,000 with fringe benefits. This will result in significant additional earnings for households and related businesses throughout Louisiana, particularly in the Parish, the Baton Rouge and New Orleans metropolitan areas, and the other River Parishes.

To the extent possible, LRD will continue to hire locally. Employment opportunities will be available for all sectors of the Louisiana work force. As a result, there will be significant additional economic benefits to the community in and around the GME Project. LRD Human Resources personnel will continue their efforts to communicate job opportunities and training requirements at high schools within the region.

To the extent possible, LRD will purchase goods and services locally. The economic benefits occur not only as the result of direct expenses associated with the project, but also as the result of indirect benefits (often referred to as "multiplier" or "ripple" effects). Specifically, direct dollars put into the local economy are in turn spent for goods and services from multiple providers, resulting in a super-additive benefit above the base value of the initial expense.

To quantify these positive impacts, LRD commissioned James A. Richardson, Ph.D., Alumni Professor of Economics at Louisiana State University to conduct an independent economic impact analysis. According to his analysis, presented as Attachment 10, the economic benefit to the Parish and the state will be significant. Dr. Richardson's report presents his findings in detail; some key results are summarized below.

[10] Many of the numbers presented in this Subsection are estimates prepared by James A. Richardson, Ph.D., Alumni Professor of Economics at Louisiana State University.

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Total construction costs are projected to be $3.2 billion. Dr. Richardson estimates that on average, $100 million per month of construction spending will occur during the 30-month construction period. Excluding spending on specialty equipment and materials that will be purchased from states other than Louisiana (estimated to total $1.033 billion over the life of the construction project), it is anticipated that over $1.22 billion in direct and indirect business transactions per year will occur within the state over the life of the construction project. Statewide, there is a projected increase in household earnings of nearly $377 million, representing an average of 7,401 direct and indirect jobs for each year of the construction phase. The average wage for these jobs is estimated to be $50,939.

During the construction phase of the project, the state will collect about $24.9 million in a variety of taxes, including sales and income taxes (this does not include any use tax associated with equipment purchased in other states but installed and used in Louisiana). Local governments will collect approximately $16.6 million in sales and property taxes. These numbers do not include any direct property or sales taxes paid by MPC for the construction of the GME Project.

To further demonstrate its commitment as a proud member of the local community LRD has elected not to participate in local sales tax exemption programs.

It is estimated that the state will collect an additional $1.64 million in total taxes each year once the GME Project is brought on-line; local governments will collect about $1.1 million in local tax collections. It is estimated that the Parish will receive about $0.5 million of these local tax collections during the operation of the expanded refinery. This will be in addition to the taxes paid directly by MPC, either for property or for equipment purchased and used on the production site.

7.2.6 Summary

As demonstrated herein, as well as in Section 7.1, the environmental impact costs have been avoided to the maximum extent possible. Accordingly, the social and economic benefits resulting from the project overwhelmingly outweigh the environmental impact costs.

7.3 ARE THERE ALTERNATIVE PROJECTS WHICH WOULD OFFER MORE PROTECTION TO THE ENVIRONMENT THAN THE PROPOSED FACILITY WITHOUT UNDULY CURTAILING NON-ENVIRONMENTAL BENEFITS?

The goal of the GME Project is to provide critically needed environmentally acceptable fuels for U.S. markets. As lighter, sweet crude oil becomes less available on world markets, the capability to supply these fuels from heavy, sour crude oils becomes increasingly important. These new units along with the existing units at the refinery will provide a unique conversion capability to allow the proposed expanded refinery to accomplish this goal.

A Conceptual-Phase Decision Support Study completed by MPC in 2004 indicated that adding additional crude and coker capacity with other process unit upgrades at one of its existing refineries would be the best option to address the projected increases in demand for refined products (as discussed in detail in Section 7.2). In a Feasibility Phase Study conducted in 2005, MPC determined that the proposed GME Project offered more protection to the environment than any other project without unduly curtailing non-environmental benefits.

The GME Project will integrate a parallel second refining train into the existing refinery. This specific combination of units that provides this unique conversion capability is described below. The following eight major new refinery process units are being added:

- New Crude/Vacuum Unit
- New Delayed Coker
- New Gas Oil Hydrocracker
- New CCR Platformer
- New Naphtha Hydrotreater
- New Jet Kerosene Hydrotreater
- New Saturate Gas Plant
- New Sulfur Recovery Unit

In addition, the project will include the following elements:

- New Water Treatment and Steam Generation
- New Tankage
- New Dock with a New Water Intake Structure
- Crude and Product Pipeline Upgrades
- Hydrogen Production

The process of determining the components of the project, as well as unit production rates were evaluated during the Conceptual-Phase Decision Support Study. Eleven different project alternatives were evaluated during the study. Each alternative included a new Coker Unit, a new Sulfur Recovery Unit ([SRU] Claus Unit and Tail Gas Treatment Unit [TGTU]), a new Sour Water Stripper, and a new Amine Regeneration Unit. These four units are considered the base alternative because any new heavy, sour crude capacity without additional coker capacity to process the heavy bottoms would not allow full conversion to critically needed fuels. Other considerations included:

- Additional crude capacity would require an increase in hydrotreating capacity to remove sulfur to produce environmentally acceptable products. Constructing new hydrotreating units with associated amine absorption requires new amine regeneration;
- The necessity for additional sulfur removal requires an increase in SRU capacity to convert H_2S into elemental sulfur;
- Other base assumptions, besides a balance between crude and coker capacity, are to provide sufficient crude capacity to eliminate the need to purchase outside gas oil on the open market to maximize FCCU throughput; and
- Minimize the necessity to sell intermediates and maximize the sale of finished fuels critically needed by the U.S.

Table 7-6 illustrates the differences between each of the alternatives considered.

Table 7-6
Unit Configurations for Alternative Projects Considered

Projects	New Crude Unit	Hydrotreater Type	Hydro-cracker	Catalytic Cracker	Alkylation Unit	CCR[1]
AA	No	No	No	No	No	No
A	310 MBD[2]	Kerosene	No	No	No	No
B	325 MBD	Kerosene	No	No	No	No
1A	150 MBD	No	No	No	No	No
1B	150 MBD	Gas[3]	No	No	No	No
1C	150 MBD	Naphtha	No	No	No	Yes
1D	150 MBD	Gas/Naphtha	No	No	No	Yes
1E	150 MBD	Naphtha	Mod Pres.	No	No	Yes
2A	180 MBD	Gas/Nap[4]/Ker[5]	No	No	No	Yes
2B	180 MBD	Nap/Ker	Mod Pres.	No	No	Yes
2C	180 MBD	Gas/Nap/Ker	No	FCCU – Yes	Yes	Yes

[1]CCR = Continuous Catalyst Regeneration Platformer
[2]MBD = Thousand Barrels/Day
[3]Gas = Gas Oil
[4]Nap = Naphtha
[5]Ker = Kerosene

Some of the projects in the table have no stand alone viability, but are necessary to determine feasibility for other projects. Alternative projects were evaluated using linear modeling techniques. Project 2B was selected as the proposed GME Project in comparison to the other alternative projects.

Project AA was ruled out since a new Coker Unit without a new Crude Unit to supply feed is both technically and economically infeasible, but it does provide valuable model output with which to evaluate other projects. This alternative has fewer emissions than the proposed GME Project (Alternative 2B) because refining capacity would not increase since nothing would be built, not even the base alternative Coker Unit, SRU, or Amine Regeneration Unit. As such, emissions of the existing refinery would remain unchanged. However, this project fails to provide the critically needed fuel supply demonstrated in Section 7.2.

Projects A & B, supply the new Coker Unit with feedstock from a large new Crude Unit. These projects also satisfy the FCCU gas oil feedstock requirement, but the feedstock is of low quality because no new gas oil hydrotreating capacity is provided.[11] These projects appear to have slightly less emissions than the proposed GME Project because they do not provide the additional upgrading of refinery intermediates into finished critically needed fuels. However, on the contrary, to produce the needed fuels, these intermediates require transportation to another processing facility with available upgrading capacity. Even if the other facility had the advanced environmental controls as the proposed GME Project, the emissions from the required transportation make these alternatives less protective of the environment than the proposed GME Project.

Project 1A balances the crude and coker capacity. This project also satisfies the FCCU gas oil feedstock requirement, but the feedstock is of low quality because no new additional gas oil hydrotreating capacity is provided. This project appears to have slightly less emissions than the proposed GME Project; however, like the above projects, it still requires transportation of intermediates and their conversion to finished fuels at another facility which result in higher emissions than the proposed GME Project. Further, since the project provides for no additional hydrotreating capacity, it requires the sale of high sulfur intermediates, which makes it economically infeasible.

Project 1B balances the crude and coker capacity. It adds gas oil hydrotreating capacity to supply the FCCU requirement for high quality gas oil feedstock. This project appears to have slightly less emissions than the proposed GME Project; however, like the above projects, it still requires transportation of intermediates and their conversion to finished fuels at another facility which results in higher emissions than the proposed GME Project. Further, since the project provides for no naphtha or kerosene hydrotreating capacity, it requires the sale of high sulfur intermediates, which makes it economically infeasible.

[11] High quality FCCU feedstock is gas oil that has been hydrotreated or hydrocracked. The gasoline and diesel products made from this high quality feedstock require little to no further hydrotreating to make environmentally acceptable fuels. The FCCU gasoline and diesel products made from low quality (un-hydrotreated or un-hydrocracked feedstock) will require further hydrotreating to meet environmental fuel specifications. The choices then are to hydrotreat or hydrocrack the gas oil before it goes to the FCCU or to hydrotreat the products. Hydrotreating the products requires building two hydrotreaters, one for gasoline, and one for diesel, instead of building one hydrotreater or hydrocracker for the gas oil feedstock. Building two hydrotreaters would have more environmental impact than building one.

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Project 1C balances the crude and coker capacity. This project also satisfies the FCCU gas oil feedstock requirement, but the feedstock is of low quality because no new gas oil hydrotreating capacity is provided. While it supplies additional gasoline by the addition of naphtha hydrotreating and CCR, it does not provide kerosene hydrotreating. This project appears to have slightly less emissions than the proposed GME Project; however, like the above projects it still requires transportation of intermediates and their conversion to finished fuels at another facility which result in higher emissions than the proposed GME Project. In addition, the sale of high sulfur intermediates makes the project economically infeasible.

Project 1D balances the crude and coker capacity and provides the FCCU with high quality feedstock. While it supplies additional gasoline by the addition of naphtha hydrotreating and CCR, it does not provide kerosene hydrotreating. This alternative appears to have slightly less emissions than the proposed GME Project; however, like the above projects it still requires transportation of intermediates and their conversion to finished fuels at another facility which result in higher emissions than the proposed GME Project. In addition, the sale of high sulfur intermediates makes the project economically infeasible.

Project 1E balances the crude and coker capacity and provides for additional naphtha hydrotreating and CCR capacity. It introduces a moderate pressure gas oil hydrocracker, which supplies the FCCU with high quality gas oil feedstock, and also provides other additional valuable intermediate upgrades. This project evaluates the differences of gas oil hydrocracking versus gas oil hydrotreating, and does supply additional gasoline, but does not provide for kerosene hydrotreating. This project appears to have slightly less emissions than the proposed GME Project; however, like the above projects it still requires transportation of intermediates and their conversion to finished fuels at another facility which result in higher emissions than the proposed GME Project. In addition, the sale of high sulfur intermediates makes the project economically infeasible

Projects 2A & B both balance crude and coker capacity and define the differences between supplying high quality feedstock to the FCCU with either a gas oil hydrotreater or a hydrocracker. Full hydrotreating capacity for naphtha and kerosene is provided along with additional CCR capacity. Both alternatives maximize the yield of critically needed fuels and substantially have the same emissions. Project 2B gives some higher fuel yields compared to

2A and also provides more flexibility shift between fuels. Because these alternatives eliminate the need for transportation of intermediates they provide critically needed environmentally acceptable fuels at the lowest emission rates of any of the other projects considered.

Project 2C evaluates an alternative that yields the same critically needed fuels that 2B does, but it does so by increasing FCCU capacity and Alkylation Unit capacity. While this project provides some benefits it was rejected since it has much higher emissions.

The detailed design effort for the GME Project is being executed by Fluor Corporation, one of the world's largest, publicly owned engineering, procurement, construction, and maintenance services organizations. MPC engineering standards and oversight activities mandate that the technologies selected and the design specifications meet or exceed applicable code-of-practice requirements. Thus, reliability of the technologies and design criteria will be ensured.

As demonstrated in Section 7.1, the technologies selected for the GME Project will avoid adverse environmental effects to the maximum extent possible. There will be no compatibility problems with respect to any interconnections with existing equipment, as the existing refinery complex is the newest grass-roots refinery in the U.S. As such, there are no alternative projects which would offer more protection to the environment than the proposed facility without unduly curtailing non-environmental benefits.

7.4 ARE THERE ALTERNATIVE SITES WHICH WOULD OFFER MORE PROTECTION TO THE ENVIRONMENT THAN THE PROPOSED FACILITY SITE WITHOUT UNDULY CURTAILING NON-ENVIRONMENTAL BENEFITS?

MPC determined that it would be advantageous to expand its U.S. refining capacity to provide critically needed environmentally acceptable fuels to the U.S. market. This could be accomplished by either: 1) constructing a new grass-roots facility (i.e., a facility constructed on an undeveloped tract of land); or 2) expanding one or more of its existing refineries. Constructing a new grass-roots facility was deemed unacceptable for the following reasons.

- MPC's existing refineries are located in areas already zoned for industrial activity.
- The environmental costs of developing a grass-roots facility are not limited to the footprint of the refinery itself. New infrastructure would have to be developed to accommodate raw material delivery and finished product shipments. This includes, but is not limited to: land for roadways; rail access; dock access; liquid pipelines; gas pipelines etc. In addition, refineries require significant infrastructure to ensure that a reliable source of electric power is available. To avoid adverse potential environmental effects to the maximum extent possible, at a minimum a refinery needs electric power from two independent sources. The LRD has triplicated independent electric feeds. Acreage for transmission lines and substations must also be considered.

Conceptual / Feasibility studies to increase the supply of critically needed fuels included all of MPC's refineries. A project the size of the proposed GME Project could not be implemented at several of the other MPC refineries because there is not enough available land at those facilities.

Of the remaining refineries, MPC selected Garyville for this expansion project because of its existing infrastructure, history of successful project execution, and sustained record of environmental compliance.

The key components of the existing infrastructure include:

- Transportation
  - The site is located adjacent to the Mississippi River. It has four existing docks located on the river.
  - The refinery is served by multiple hydrocarbon pipelines which supply raw materials and move products to numerous market locations.
  - The refinery can receive crude oil from the Louisiana Offshore Oil Port (LOOP) which gives the refinery easy access to world crude supplies. MPC is the majority owner of LOOP.
  - The refinery is served by two railroads.
  - The refinery has direct access to a four-lane sub-divided U.S. highway and a two lane state highway.
  - The refinery is 25 miles from a major international airport.
- Utilities
  - The Mississippi River provides a year-round supply of water for cooling, plant use, potable use, and fire fighting; therefore, no additional water storage ponds or reservoirs will be required.
  - The Mississippi River is not impaired for any water quality standards that would be affected by the operation of a petroleum refinery.
  - The refinery is supplied electricity from three separate power generating stations through three separate feeds.
  - The refinery is also connected to hydrogen and oxygen pipelines.

As the newest refinery in the U.S., LRD offers environmental advantages that are not available at other MPC locations. Specifically, the LRD was built in compliance with all applicable NSPS requirements. It has an unparalleled record of safety and environmental stewardship. The LRD is located in a NAAQS attainment area; the GME Project will be

constructed on a site that is already zoned for heavy industrial activity, and no known archaeological sites will be impacted.

The proposed expansion site is located on land immediately adjacent to the existing refinery. The GME Project and the existing refinery are located in an area zoned industrial, and are in an enterprise zone. It is not located adjacent to or in the vicinity of any estuarine waterbodies. The proposed site will not have an impact on any sensitive wildlife. The site is over 100 kilometers away from the Breton Sound Class I Wildlife Management Area. The site is not within the Louisiana Coastal Management Zone. Wildlife populations present at the proposed site are not substantial in terms of numbers, as the majority of the site has been cultivated for sugarcane production.

Based on the most current Flood Insurance Rate Map of the Parish, the GME Project will be located above the 100-year floodplain, and is not subject to frequent flood hazards. The elevation of the site is approximately 5-20 feet above the National Geodetic Vertical Datum. No additional diking is required. An existing Mississippi River levee protects the refinery from river flooding.

With respect to hurricanes, the site sustained only minor damage during Hurricane Katrina in 2005. Only a few pieces of insulation required replacement. The site is not subject to storm surge; wave action is not considered a threat because of the site elevation and distance (over 60 miles) from the nearest shoreline. The GME Project will be designed to be protected from a 10-year, 24-hour storm event, assuming an intensity of 3 inches per hour over a 4-hour period. With respect to wind speed design, the lateral forces exerted by wind on vessels, buildings, and structures will be calculated using pressures taken from Section 2311 of the latest edition of the Uniform Building Code accepted by the local governing body.

The aquifers underlying the LRD, as well as the GME Project, include the "Shallow Aquifer," the Gramercy Aquifer, the Norco Aquifer, and the Gonzales-New Orleans Aquifer. None of the aquifers are used for drinking water. A total of 21 wells have been installed at the LRD to monitor groundwater as required by LDEQ regulations. To date, no release to the groundwater beneath the site has been detected. Based on historical knowledge of the proposed construction areas, there is no indication that subsurface impacts of anthropogenic origin exist at the site.

Other synergies associated with selecting LRD for the expansion project are related to its performance record. The LRD can process heavier and sourer crude slates than the other facilities. Garyville's infrastructure system is the newest among the MPC refinery assets. It has an outstanding track record in business management, including, but not limited to, the successful implementation of Environmental and Safety Management Systems. The goal of these systems is not simply status quo; rather, the goal is continual improvement. Garyville's production cost on a per-barrel basis is among the lowest in the U.S. Its operation and maintenance cost per barrel of throughput is also among the lowest in the U.S. In addition, its operational reliability is among the best in the industry.

As such, there are no alternative sites which would offer more protection to the environment than the proposed facility site without unduly curtailing non-environmental benefits.

7.5 ARE THERE MITIGATING MEASURES WHICH WOULD OFFER MORE PROTECTION TO THE ENVIRONMENT THAN THE FACILITY AS PROPOSED WITHOUT UNDULY CURTAILING NON-ENVIRONMENTAL BENEFITS?

The LRD is the newest and therefore one of the most highly regulated petroleum refineries in the U.S. The LRD was placed in service in 1976, the same year the NSPS were promulgated by the EPA. As a result, the refinery was designed and constructed with state-of-the-art pollution abatement equipment to meet these stringent standards. Consequently, none of the units required "grandfather" status because they all met or exceeded regulatory requirements at that time. The effluent from the LRD's WWTP has not exceeded an LPDES permit limit in over six years. One of the reasons that the LRD has such an exemplary record of compliance is MPC's investment in WWTP upgrades concurrent with refinery process unit expansions. The refinery was constructed and continues to operate in a manner that ensures that the potential and real adverse environmental effects are avoided to the maximum extent possible.

The LRD's commitment to environmental excellence, which ensures that the real and potential adverse environmental effects are avoided to the maximum extent possible, is evidenced by its 2002 induction into the NEPT program. This program was designed by the EPA to recognize companies for their achievements beyond compliance. The cornerstones of the program are a record of sustained compliance, community outreach, and an environmental management system that leads to continual improvement. The LRD is the first and only refinery in the nation accepted into this program. These cornerstones will allow the LRD to construct and operate the GME Project and ensure that potential and real adverse environmental effects are minimized to the maximum extent possible (for detail see Section 7.1).

Safety and environmental stewardship are priorities at the LRD. The refinery is a member of OSHA's elite program, the VPP. The LRD has maintained STAR status in the VPP program since 1994. STAR status is the highest ranking available within the VPP, and is awarded only to exemplary worksites that have implemented comprehensive, successful safety and health management systems, and achieved injury/illness rates below their industry's national average. The NEPT is a voluntary partnership that recognizes top environmental performance among participating U.S. facilities of all types, sizes, and complexity. It includes both public and private facilities. Program partners are providing leadership in many

areas, including preventing pollution at its source. Currently, the program has about 500 members. The LRD is the only petroleum refinery that has been inducted into the partnership. Only approximately sixty other facilities in the U.S. share the privilege of membership in both VPP and NEPT. Cornerstones of both VPP and NEPT are management systems that lead to continual improvement.

The LRD will continue to be a leader in pollution prevention and environmental stewardship, not only locally but also nationally. As a recipient of twelve Governor's Environmental Leadership Program awards since the inception of the program in 1996, the dedication of the facility's entire workforce to environmental stewardship is unparalleled. The goal of LRD's Environmental and Safety Management Systems is not to maintain the status quo, but to be fully dedicated to continual improvement.

There are no other mitigating measures that would offer more protection to the environment without unduly curtailing non-environmental benefits than what has been described in Section 7.1. As demonstrated above, the LRD is exemplary in its environmental stewardship. Below are noteworthy examples:

- The refinery has an existing ambient air monitoring network consisting of three ambient air monitoring stations installed in March 2003 that are used to ensure the safety and health of adjacent communities. Since installation, no violations of applicable standards have been detected. These ambient air monitoring stations were voluntarily installed by LRD. The data are shared with the LDEQ and the local Community Advisory Panel. The GME Project will expand this network to four stations; all four will be upgraded to include real time analyzers for two sulfur based molecules and four organic molecules;
- The refinery's Air Monitoring Team is trained to use air monitoring instruments to do both fenceline and community monitoring in response to odor complaints and emergency incidents;
- A new wastewater treatment train will be constructed and operated to ensure that the refinery has an overabundance of capacity for treating refinery wastewaters. Real adverse environmental effects are fully avoided due to the

ability of the existing and new wastewater treatment trains to remove nutrients from the treated effluent. Nutrient loading into the Mississippi River has been linked to anoxic conditions in the Gulf of Mexico (commonly referred to as the "Dead Zone" – see the Louisiana Universities Marine Consortium [LUMCON] site on Gulf Hypoxia, http://gulfhypoxia.net/). By employing this nutrient removal process, LRD even further ensures that real adverse effects associated with its operation are avoided to the maximum extent possible. Currently, there is no regulatory requirement to restrict the discharge of nutrients from petroleum refineries into waters of the state.

- In order to ensure the WWTP is not overburdened by excessive amounts of hydrocarbons and other contaminants, monitoring for hydrocarbon leaks into the cooling water from heat exchangers is accomplished using a two-phased approach. Significant leaks are easily detected by a decrease in the oxidation reduction potential of the bulk cooling water. This is continuously monitored by instrumentation and alarmed in the Central Control Room. Smaller leaks are found by routine, simplified headspace analysis of return cooling water samples. If either type of leak is detected, further samples starting at unit battery limits back to individual exchangers are taken until the leak is found.

- As water is turned to steam in a boiler, the dissolved solids that are not removed in the boiler feed water system are concentrated. These must be controlled at a safe level to prevent boiler failure. The dissolved solids level is closely monitored and water is blown down or purged from the boiler and fresh boiler feed water is added to maintain dissolved solids in a safe range. Although many facilities often discharge boiler blowdown without treatment, LRD routes the blowdown to the OWS for treatment in the WWTP to avoid adverse environmental effects to the maximum extent possible.

- The LRD treats its own sanitary wastewater in nine package STUs located throughout the facility. The GME Project will add four new STUs. These STUs use the activated sludge process with clarification and disinfection to produce effluent that is suitable for direct discharge; however, the refinery routes effluent from the STUs into the OWS for further treatment in the WWTP.

- To provide surge capacity for rainfall events, the existing refinery has three 100 Mbbl rainwater impoundment tanks. As part of the GME Project, a new 250 Mbbl rainwater impoundment tank will be added and one of the existing three 100 Mbbl tanks will be converted into a second equalization tank. These tanks will be common to both the existing refinery and the GME Project, providing the expanded refinery a total of 450 Mbbl (in excess of 18.8 million gallons) of rainfall surge capacity. Although not regulatorily required, this allows for the capture of all stormwater that falls on the paved, curbed process area based on a ten year rainfall event thereby avoiding adverse environmental effects to the maximum extent possible.

The management systems that lead to continual improvement, sustained compliance and achievement beyond compliance, employee involvement, and community outreach will ensure that the potential adverse environmental impacts are avoided to the maximum extent possible. These same commitments of excellence along with applying BACT to the new air emission point sources of the GME Project, as well as not seeking any increase in permitted water discharge limits will ensure that real adverse environmental effects are avoided to the maximum extent possible. In fact, for several of the larger emission point sources, controls more stringent than that required by the BACT analysis will be provided as follows:

- By incorporating selective catalytic reduction (SCR) in combination with ultra low nitrogen oxide (NO_X) burners for five of the largest heaters used in the GME Project, LRD will provide the very best NO_X control capability that is available. No other technologies offer more protection to the environment. The SCR technology uses ammonia to react with NO_X to form elemental nitrogen (80% of air). While it would be considerably less expensive to use anhydrous ammonia for this purpose, the LRD has chosen to use aqueous ammonia. Anhydrous ammonia poses a significantly higher safety risk during transportation, storage, and use.

- LRD was able to lower carbon monoxide (CO) emissions for the GME Project heaters and boiler than those levels required by BACT. While BACT for CO is consistent with an emission factor of 0.04 lbs/MMBTU, according to burner manufacturer John Zink this emission factor can be reduced by more than half

through proper operation and maintenance of the GME Project heaters and boiler. Based on an LDEQ request, LRD voluntarily accepted a permit limit that reduced CO emissions from the GME Project heaters and boiler by greater than 52%. These limits will be verified by installing CO continuous emission monitors (CEMs) on the large heaters and boilers (greater than 100MM BTU/hr heat release) in the GME Project.

- LRD has committed to a fuel gas sulfur limit of 25 ppmv as hydrogen sulfide (H_2S) on an annual average, which is significantly below the NSPS and BACT requirements. There is no other mitigating measure that can further reduce sulfur emissions without unduly curtailing non-environmental benefits.

- BACT for sulfur conversion has been established at a range between 95.0 and 99.9 percent. LRD has committed to achieve 99.9 percent conversion efficiency – the very best attainable. The maximum 0.1 percent unreacted sulfur in the form of waste gases containing a small amount of unabsorbed H_2S will be combusted to sulfur dioxide (SO_2) in the Thermal Oxidizer at the end of the TGTU. The maximum 0.1 percent unreacted sulfur is the NSPS, and presently the LRD is far below that required by the NSPS. In order to stay below, the NSPS the LRD recently retrofitted its existing three SRUs with steam fired reheat on the sulfur condensers and added increased amine recirculation in the TGTU. The GME SRUs will also be constructed to be below NSPS.

- A significant enhancement to minimizing SO_2 emissions resulting from SRU operational difficulties is accomplished through both oxygen enrichment and the refinery's sulfur shedding strategy.

- To control H_2S emissions, LRD will de-gas the liquid sulfur product by vacuum at the point where it exits the Claus trains. The sulfur pit tank will also be equipped with a steam-driven ejector to draw sweep air from the vessel headspace. This vent stream will capture volatilized H_2S, and be routed back to the front end of the SRU and converted to elemental sulfur. These two measures represent the most stringent commercially-available options for H_2S control from this type of source.

- LRD uses a state-of-the art instrument called a "ThermaCam GasFind IR" which employs thermal imaging to detect vapor leaks. EPA has published a Proposed Rule to establish an Alternative Work Plan that would allow this technology to be used in place of the existing 25-year-old Leak Detection and Repair (LDAR) detection technology. LRD is in the process of developing a protocol to incorporate this technology into its LDAR program.

- Diesel-powered back-up generators are included in the GME Project. It is important to note that these generators are critical for controlling emissions in the event of a power outage. If emergency power were not available, it would be necessary to vent hydrocarbons from pressurized units to flares to ensure the safe shutdown of the facility.

- LRD will utilize the most stringent available technology for marine vapor recovery. This technology will provide a level of control that will be more stringent than required by existing state regulations. Specifically, volatile organic compound (VOC) emissions from products with a true vapor pressure greater than 0.5 psia will be routed to the Marine Vapor Recovery Unit. This is more stringent than current state regulation requires. For marine vapor recovery, there is no other mitigating measure that would offer more protection to the environment than the facility as proposed.

- Wastewater from the IGF cells is sent to a CCCT for required cooling before being sent to the Biological Reactors. The CCCT will not have any air emissions, as it is closed circuit in nature (i.e., the wastewater remains within the heat exchanger instead of being exposed directly to the atmosphere via cascading). This will significantly reduce VOC emissions beyond current regulatory requirements.

In addition to the above-described mitigating measures, although not required by regulation, LRD will install NO_X CEMs on the thirteen process heaters with design firing rates above 100 MM BTU/hr. This will provide an even greater assurance that NO_X emissions will be avoided to the maximum extent possible.

As demonstrated above the LRD has planned the GME Project such that the environmental effects of the proposed construction and operation activities will be avoided to the maximum extent possible. Accordingly, there are no other mitigating measures which would offer more protection to the environment than the facility as proposed without unduly curtailing non-environmental benefits.